

**WHAT IS CLAIMED IS:**

1. A method of fabricating multiple chemical arrays on a substrate, each array having multiple rows of feature locations with arrays of different sets being arranged in a sideways orientation with respect to the rows, the method comprising dispensing drops from a drop dispensing head onto the substrate while maintaining a gap between the head and substrate and moving them relative to one another along a path so as to fabricate the arrays, wherein the path for the relative moving comprises:

(a) moving the head in a direction along the rows of a first array set then moving the head in an opposite direction along the rows of a second array set without intervening movement of the head in the opposite direction over all of the first array set;

(b) repeating (a) with the second array set of an earlier cycle being the first array set of a later cycle.

2. A method according to claim 1 wherein the chemical arrays are biopolymer arrays.

3. A method according to claim 1 wherein the first and second array sets are adjacent to one another.

4. A method according to claim 1 wherein the repeating in (b) is with a same two array sets.

5. A method according to claim 1 wherein (a) is repeated multiple times each time with a new second array set.

6. A method according to claim 5 wherein each new second array set is adjacent the first array set of the same cycle.

7. A method according to claim 5 additionally comprising then repeating the relative moving path of the head and substrate while dispensing drops.

8. A method according to claim 7 wherein the head is re-loaded with fluid between repetitions of the path.
9. A method according to claim 7 wherein different repetitions of movement of the head on the path during drop dispensing, are parallel and offset in the sideways orientation from one another.
10. A method according to claim 1 wherein the rows of features in the arrays are straight lines.
11. A method according to claim 1 wherein each array set has multiple arrays arranged in the direction of the rows.
12. A method according to claim 11 wherein the arrays are spaced apart.
13. A method according to claim 12 wherein the arrays have the same array layout.
14. A method according to claim 1 wherein the majority of the rows in arrays within a set are dispensed while the head is moving in a same direction along the rows.
15. A method according to claim 11 wherein at least 80% of the rows in arrays within a set are dispensed while the head is moving in a same direction along the rows.
16. A method according to claim 1 additionally comprising separating the substrate into units each of which carries at least one of the arrays.
17. A method according to claim 1 additionally comprising adding array identifiers to the substrate each in proximity with a corresponding array.
18. A method according to claim 1 wherein the head has multiple drop dispensers.
19. A method according to claim 18 wherein the drop dispensers are pulse jets.

20. An apparatus for fabricating multiple chemical arrays on a substrate, each array having multiple rows of feature locations with arrays of different sets being arranged in a sideways orientation with respect to the rows, comprising:

- (a) a head with a drop dispenser;
- (b) a transport system to move the head relative to the substrate while maintaining a gap therebetween;
- (c) a processor which causes the head to dispense drops while relatively moving the head along a path which comprises:

(i) moving in a direction along the rows of a first array set then moving in an opposite direction along the rows of a second array set, without intervening movement of the head in the opposite direction over all of the first array set; and

(ii) repeating (i) with the second array set of an earlier cycle being the first array set of a later cycle.

21.. An apparatus according to claim 20 wherein the first and second array sets are adjacent one another.

22. An apparatus according to claim 20 wherein the repeating in (ii) is with a same two array sets.

23. An apparatus according to claim 20 wherein (i) is repeated multiple times each time with a new second array set.

24. An apparatus according to claim 23 wherein each new second array set is adjacent the first array set of the same cycle.

25. An apparatus according to claim 23 wherein the processor additionally repeats the relative moving path of the head and substrate while dispensing drops.

26. An apparatus according to claim 25 wherein the processor additionally causes the head to be re-loaded with fluid between repetitions of the path.

27. An apparatus according to claim 25 wherein different repetitions of movement of the head on the path during drop dispensing, are parallel and offset in the sideways orientation from one another.
28. An apparatus according to claim 20 wherein the rows of features in the arrays are straight lines.
29. An apparatus according to claim 20 wherein each array set has multiple arrays arranged in the direction of the rows.
30. An apparatus according to claim 29 wherein the arrays are spaced apart.
31. An apparatus according to claim 30 wherein the arrays have the same array layout.
32. An apparatus according to claim 20 additionally comprising a cutter to separate the substrate into units each of which carries at least one of the arrays.
33. An apparatus according to claim 20 additionally comprising a printer which adds array identifiers to the substrate each in proximity with a corresponding array.
34. An apparatus according to claim 20 wherein the head has multiple drop dispensers.
35. An apparatus according to claim 34 wherein the drop dispensers are pulse jets.
36. A computer program product for use with an apparatus for fabricating multiple chemical arrays on a substrate, each array having multiple rows of feature locations with arrays of different sets being arranged in a sideways orientation with respect to the rows, the apparatus having:
  - a head with a drop dispenser;

a transport system to move the head relative to the substrate while maintaining a gap therebetween; and

a processor which controls the head and transport system;

the computer program product comprising a computer readable storage medium having a computer program stored thereon which, when loaded into the processor, performs the steps of dispensing drops from the head while relatively moving the head along a path which comprises:

(i) moving in a direction along the rows of a first array set then moving in an opposite direction along the rows of a second array set without intervening movement of the head in the opposite direction over all of the first array set; and

(ii) repeating (i) with the second array set of an earlier cycle being the first array set of a later cycle.

37. A computer program product according to claim 36 wherein the first and second array sets are adjacent one another.

38. A computer program product according to claim 36 wherein (i) is repeated multiple times each time with a new second array set.

39. A computer program product according to claim 38 wherein the program additionally then repeats the relative moving path of the head and substrate while dispensing drops.

40. A computer program product according to claim 39 wherein the head is re-loaded with fluid between repetitions of the path.

41. A computer program product according to claim 36 wherein each array set has multiple arrays arranged in the direction of the rows.

42. A computer program product according to claim 41 wherein the arrays are spaced apart.

43. A computer program product according to claim 42 wherein the arrays have the same array layout.

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